

**Amendments to the Claims:**

1. (Previously presented) An apparatus for facilitating the recording of data, comprising:

an optical source;

a metallic structure that receives optical radiation from the optical source and emits optical output from an emission region in said structure, said structure having an array of features that couple the radiation to at least one surface plasmon mode of said structure to increase the emitted optical output from said emission region beyond what the emitted optical output from said emission region would be in the absence of said features, wherein the emitted optical output includes a near-field portion that extends from said emission region out to a distance less than the average wavelength of the emitted optical output; and

at least one element secured to said metallic structure, said at least one element generating magnetic fields whose strength is sufficient to write data in a data recording medium located within the near-field portion.

2. (Original) The apparatus of Claim 1, further comprising a platform to which said structure and said at least one element are secured, wherein said platform is configured to be moved relative to a data recording medium while the separation between said emission region and a surface of the data recording medium is kept to less than said average wavelength.

3. (Original) The apparatus of Claim 2, wherein said separation is no greater than said near-field distance.

ARC920010114US1

-3-

10/026,029

4. (Original) The apparatus of Claim 2, wherein said platform is a slider having an air-bearing surface.
5. (Original) The apparatus of Claim 1, said optical source comprising a laser.
6. (Original) The apparatus of Claim 5, wherein said emission region is located at an output face of said laser.
7. (Original) The apparatus of Claim 1, said optical source comprising an optical waveguide coupled to a source of optical radiation.
8. (Previously presented) The apparatus of Claim 1, wherein said metallic structure includes metal selected from the group consisting of Au, Ag, Cu, Al, and Cr.
9. (Original) The apparatus of Claim 1, wherein said emission region includes dielectric material.
10. (Previously presented) The apparatus of Claim 1, wherein the spacing between said features in said metallic structure is chosen to enhance the optical output from said emission region at at least one predetermined wavelength, and wherein the emitted optical output is intense enough to heat a magnetic recording medium sufficiently to facilitate the recording of data.
11. (Previously presented) The apparatus of Claim 1, wherein said array includes recessed areas within said metallic structure.
12. (Previously presented) The apparatus of Claim 1, wherein the spacing between said features in said metallic structure is periodic.
13. (Previously presented) The apparatus of Claim 1, wherein said metallic structure is joined to at least one dielectric layer.

ARC920010114US1

-4-

10/026,029

14. (Original) The apparatus of Claim 1, wherein said emission region includes an aperture.

15. (Previously presented) The apparatus of Claim 14, wherein said aperture is a slit.

16. (Previously presented) The apparatus of Claim 14, wherein said aperture has a width at its narrowest point of about 10-100 nanometers.

17. (Original) The apparatus of Claim 1, wherein said emission region includes a protrusion member.

18. (Original) The apparatus of Claim 1, said at least one element comprising at least one poling piece for applying a magnetic field in a portion of a storage medium as the emitted optical output from said emission region heats the portion.

19. (Previously presented) The apparatus of Claim 1, wherein the thickness of said structure is 50-500 nanometers.

20. (Original) The apparatus of Claim 1, wherein the optical radiation from said source has a full width half maximum (FWHM) of less than about 0.1 times the average wavelength of the optical radiation.

21. (Previously presented) The apparatus of Claim 1, wherein the optical radiation has a frequency that matches a resonant frequency of said structure.

22. (Original) The apparatus of Claim 1, wherein said structure includes two features.

23. (Previously presented) A method of directing electromagnetic radiation onto a data recording medium, comprising:

providing a metal structure having an array of features;

directing optical radiation onto the array of features to generate at least one surface plasmon mode, thereby enhancing the optical output emanating from an emission region in the metal structure beyond what the optical output from the emission region would be in the absence of the features, wherein the spacing between the features is chosen to enhance, at a predetermined wavelength, the optical output emanating from the emission region; and

directing the optical output from the emission region onto a recording medium to facilitate the recording of data.

24. (Original) The method of Claim 23, further comprising applying a magnetic field to the recording medium to write data into the recording medium.

25. (Previously presented) The method of Claim 24, comprising heating the recording medium with the optical output to facilitate the recording of data.

26. (Cancelled)

27. (Previously presented) The method of Claim 25, wherein the recording medium is granular and has a grain size of between 10 and 250 cubic nanometers.

28. (Original) The method of Claim 23, wherein the recording medium includes a medium selected from the group consisting of magneto-optic, phase-change, and chemical change media.

29. (Previously presented) A method of directing electromagnetic radiation onto a recording medium, comprising:

providing a metal structure having an array of features;

directing optical radiation onto the array of features to generate at least one surface plasmon mode, said at least one surface plasmon mode enhancing the effective transmission of the optical radiation through the metal structure beyond what the effective transmission would be in the absence of the features, wherein the transmission of the optical radiation through the metal structure is resonantly enhanced at a predetermined wavelength;

directing optical output emanating from the metal structure onto a recording medium to heat the recording medium, thereby facilitating the recording of data; and

reading back the data with a processor.

30. (Cancelled)

31. (Currently amended) An apparatus for facilitating the recording of data, comprising:

an optical source;

a structure that receives optical radiation from said source and emits optical output from an emission region in said structure, said structure having an array of metallic features that couple the radiation from one side of said structure to another side of said structure to ~~increase the emitted optical output from said emission region beyond what the emitted optical output from said emission region would be in the absence of said features through~~ surface plasmons generated in said structure by the optical radiation, wherein the emitted

optical output includes a near-field portion that extends from said emission region out to a distance less than the average wavelength of the emitted optical output;

at least one element secured to said structure, said at least one element generating magnetic fields for writing data in a data recording medium located within the near-field portion; and

a platform to which said structure is secured, wherein said platform is configured to be moved relative to a data recording medium while the separation between said emission region and a surface of the data recording medium is kept to less than said average wavelength.

32. (Currently amended) A method of directing optical radiation onto a recording medium, comprising:

providing a structure having an emission region and an array of metallic features that couple optical radiation into surface plasmons in the structure ~~enhance optical transmission through the emission region beyond what the optical transmission through the emission region would be in the absence of the features;~~

directing optical radiation onto the array of features;

directing optical output from the emission region that is generated by surface plasmons onto a recording medium to heat the medium and thereby facilitate the recording of data, wherein the recording medium is granular and has a grain size of between 10 and 250 cubic nanometers; and

reading the recorded data with a processor.

ARC920010114US1

-8-

10/026,029

33. (Previously presented) A method of writing data, comprising:

generating surface plasmons in a structure, in order to direct optical radiation produced by the surface plasmons onto a magnetic medium to heat a portion of the medium and thereby facilitate the recording of data; and

applying a magnetic field to the recording medium to write data into the recording medium, wherein the recording medium has a grain size of between 10 and 500 cubic nanometers.

34. (Previously presented) A method of directing electromagnetic radiation onto a data recording medium, comprising:

providing a metal structure having an array of features;

directing optical radiation onto the array of features to generate at least one surface plasmon mode, thereby enhancing the optical output emanating from an emission region in the metal structure beyond what the optical output from the emission region would be in the absence of the features; and

directing the optical output from the emission region onto a recording medium to facilitate the recording of data, wherein the recording medium is granular and has a grain size of between 10 and 250 cubic nanometers.

35. (Previously presented) The method of Claim 34, further comprising applying a magnetic field to the recording medium to write data into the recording medium.

36. (Previously presented) The method of Claim 35, comprising heating the recording medium with the optical output to facilitate the recording of data.

37. (Previously presented) The method of Claim 34, wherein the recording medium includes a medium selected from the group consisting of magneto-optic, phase-change, and chemical change media.

38. (Currently amended) A method, comprising:

directing input optical radiation onto metallic features of a structure, wherein the features have a spatial configuration selected to increase optical transmission from an emission region in the structure beyond what the optical transmission from the emission region would be in the absence of the features; and

directing output optical radiation emanating from the emission region onto a recording medium, in order to heat the recording medium and thereby assist in the recording of data in the recording medium, wherein the optical transmission from the emission region is higher as a result of at least one surface plasmon mode generated by said directing of input optical radiation onto the features.

39. (Previously presented) The method of Claim 38, wherein the recording medium has a magnetic grain size of between 10 and 500 cubic nanometers.

40. (Previously presented) The method of Claim 38, wherein the recording medium has a magnetic grain size of between 10 and 250 cubic nanometers.

41. (Previously presented) The method of Claim 38, further comprising reading back data recorded in the medium.

42. (Cancelled)

43. (Previously presented) The method of Claim 38, wherein the spatial configuration includes a periodic array.

ARC920010114US1

-10-

10/026,029



44. (Previously presented) The method of Claim 38, wherein the input optical radiation is directed onto a first surface of the features that faces the input optical radiation, thereby setting up surface charge motion around the features which leads to optical radiation emanating from a surface opposite the first surface, wherein the output optical radiation includes the optical radiation emanating from said opposite surface.

45. (Previously presented) The apparatus of Claim 1, wherein the optical radiation from the optical source is directed onto a first surface of the structure that faces the optical radiation, thereby setting up surface charge motion around the features which leads to optical radiation emanating from a surface of the structure opposite the first surface.

46. (Previously presented) The method of Claim 23, wherein the optical radiation is directed onto a first surface of the array of features, thereby setting up surface charge motion around the features which leads to optical radiation emanating from a surface opposite the first surface, wherein the optical output from the emission region includes the optical radiation emanating from said opposite surface.

47. (Previously presented) A method, comprising:  
generating surface plasmons in a structure, in order to direct optical radiation produced by the surface plasmons onto a magnetic medium and thus heat a portion of the medium, thereby facilitating the recording of data; and  
applying a magnetic field to the recording medium to write data into the recording medium.

48. (Currently amended) A method, comprising:

~~setting up surface charge motion~~ generating surface plasmons in a structure, ~~in order to direct so that~~ optical radiation resulting from the ~~surface charge motion~~ surface plasmons is directed onto a magnetic medium and thus ~~heat~~ heats a portion of the medium, thereby facilitating the recording of data; and

applying a magnetic field to the recording medium to write data into the recording medium.

49. (New) The method of Claim 48, wherein the structure has an air-bearing surface, the surface being separated from and facing the magnetic medium.

50. (New) The method of Claim 48, wherein the surface plasmons are generated by optical radiation that is incident on the structure, and wherein the structure includes an optical aperture that emits optical radiation, with the incident optical radiation being polarized perpendicularly to an axis along which a longer dimension of the optical aperture is oriented.

51. (New) The method of Claim 23, wherein the emission region includes an optical aperture from which optical output is emitted, and wherein the optical radiation is polarized perpendicularly to an axis along which a longer dimension of the optical aperture is oriented.

52. (New) The method of Claim 51, wherein the optical aperture includes a slit.

53. (New) The apparatus of Claim 1, wherein the emission region in said structure includes an optical aperture that emits optical output, and wherein the optical radiation received by said structure is polarized perpendicularly to an axis along which a longer dimension of the optical aperture is oriented.

ARC920010114US1

-12-

10/026,029